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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,203

06/20/2003

Grant M. Kloster

42P17058

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02/03/2005

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EXAMINER

NGUYEN, KHIEM D

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/600,203

Applicant(s)

KLOSTER ET AL.

Examiner

Khiem D Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14, 16, 18-27 and 29-38 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-14 and 16 is/are allowed.
- 6) ☒ Claim(s) 1-9, 26, 27 and 29-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 22<sup>nd</sup>, 2004 has been entered. A new rejection is made as set forth in this Office Action. Claims (1-14, 16, 18-25, 26-27, and 29-38) are pending in the application in which claims (18-25) are withdrawn).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

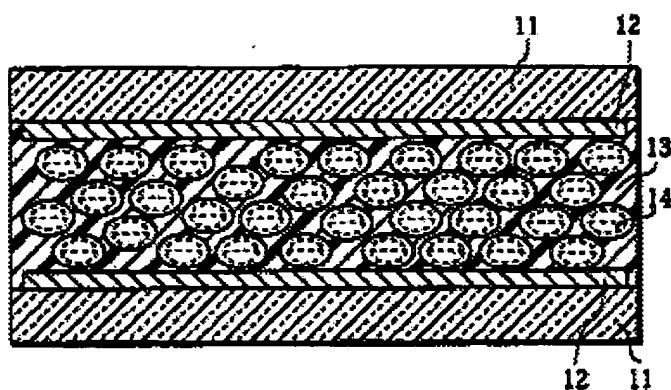
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-9, 26-27, 29-31, and 33-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakao et al. (U.S. Patent 6,452,650).

In re claim 1, Nakao discloses a method, comprising (col. 16, line 23 to col. 17, line 13 and FIGS. 1-42): forming a layer of first material (polymerizable

monomers) (col. 16, lines 65-66) between two substrates **11** of a stacked device; forming a layer of second material (oligomers or liquid crystals) (col. 16, lines 65-66) between the two substrates of the stacked device, wherein the second material causes a reaction in a portion of the first material (col. 16, line 65 to col. 17, line 13 and FIGS. 1-3).

Fig. 1



In re claim 2, Nakao discloses wherein the reaction comprises polymerization (col. 16, line 65 to col. 17, line 22 and FIGS. 1-3).

In re claim 3, Nakao discloses wherein forming the layer of first material comprises diffusing the first material between a portion of the two substrates (**FIG. 1: 11**) of the stacked device (col. 16, lines 23-34).

In re claim 5, Nakao discloses wherein forming the layer of first material comprises one or more of: injecting the first material between a portion of the two substrates of the stacked device, spraying the first material between the portion of the two substrates of the stacked device, and immersing the two substrates of the stacked device in the first material (col. 16, line 23 to col. 17, line 13).

In re claim 6, Nakao discloses wherein forming the layer of second material comprises diffusing the second material between a portion of the two substrates of the stacked device (col. 17, lines 6-13).

In re claim 7, Nakao discloses wherein the second material is selected from the group consisting of: water, a hydroxyl end-capped oligomer, and a carboxylic acid end-capped polymer (col. 16, line 65 to col. 17, line 13).

In re claim 8, Nakao discloses wherein forming the layer of second material comprises one or more of: injecting the second material between a portion of the two substrates of the stacked device, spraying the second material between the portion of the two substrates of the stacked device, and immersing the two substrates of the stacked device in the second material (col. 17, lines 6-13).

In re claim 9, Nakao discloses wherein the reaction produces a polymer foam (col. 16, line 65 to col. 17, line 23).

In re claim 26, Nakao discloses a method, comprising (col. 16, line 23 to col. 17, line 13 and FIGS. 1-42): forming a layer of material (polymerizable monomers) (col. 16, lines 65-66) between two substrates 11 of a stacked device; and reacting a portion of the layer of material, wherein the reaction results in the portion of the layer of material increasing in volume (col. 16, line 65 to col. 17, line 13 and FIGS. 1-3).

In re claim 27, Nakao discloses wherein the reaction comprises polymerization (col. 16, line 65 to col. 17, line 22 and FIGS. 1-3).

In re claim 29, Nakao discloses wherein the reaction produces a polymer foam (col. 16, line 65 to col. 17, line 23).

In re claim 30, Nakao discloses a method comprising (col. 16, line 23 to col. 17, line 13 and FIGS. 1-42): depositing a first material (polymerizable monomers) (col. 16, lines 65-66) between two substrates 11 of a stacked device; depositing a second material (oligomers or liquid crystals) (col. 16, lines 65-66) between the two substrates of the stacked device; and filling a portion of the area between the two substrate with a polymer foam as a product of a reaction between the first material and the second material (col. 16, line 65 to col. 17, line 13 and FIGS. 1-3).

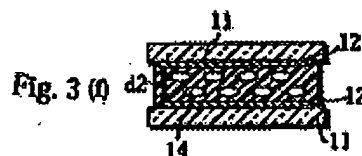
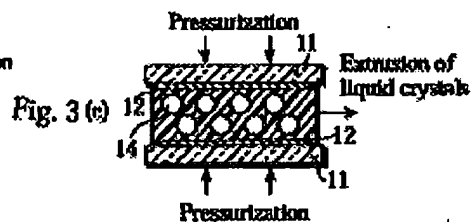
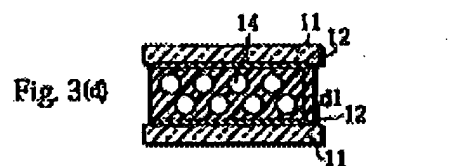
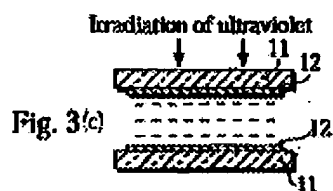
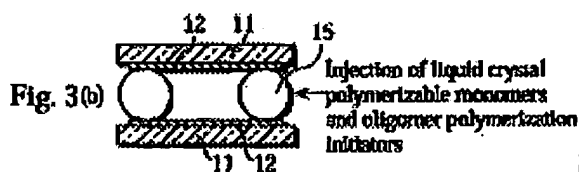
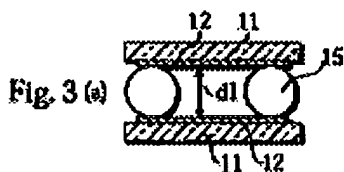
In re claim 31, Nakao discloses wherein depositing the first material comprises one of: diffusing the first material into a portion of the area between the two substrates; injecting the first material into the portion of the area between the two substrates; spraying the first material into the portion of the area between the two substrates; or immersing the two substrates in the first material (col. 16, line 65 to col. 17, line 13).

In re claim 33, Nakao discloses diffusing the second material into a portion of the area between the two substrates; injecting the second material into the portion of the area between the two substrates; spraying the second material into the portion of the area between the two substrates; or immersing the two substrates in the second material (col. 16, line 65 to col. 17, line 13).

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In re claim 34, Nakao discloses wherein the second material is selected from the group consisting of: water, a hydroxyl end-capped oligomer, and a carboxylic acid end-capped polymer (col. 16, line 65 to col. 17, line 13).

In re claim 35, Nakao discloses a method comprising (col. 16, line 23 to col. 17, line 13 and FIGS. 1-42): forming a layer of material (polymerizable monomers) (col. 16, lines 65-66) on a substrate including an interconnect structure formed thereon; removing a portion of the layer of material to expose a top surface of the interconnect structure; combining the substrate 11 with another substrate; and filling the area between the two substrates 11 with a polymer foam as a product of a reaction in the layer of material (col. 16, line 65 to col. 17, line 13 and FIGS. 1-3).



In re claim 36, Nakao discloses wherein the reaction in the layer of material further comprising polymerization (col. 16, line 65 to col. 17, line 22 and FIGS. 1-3).

In re claim 37, Nakao discloses forming the layer of material further comprising forming the layer of material to a thickness greater than the top surface of the interconnect structure (col. 16, line 65 to col. 17, line 13 and FIGS. 1-3).

In re claim 38, Nakao discloses wherein the layer of material is selected from the group consisting of: water, a hydroxyl end-capped oligomer, and a carboxylic acid end-capped polymer (col. 16, line 65 to col. 17, line 13).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakao et al. (U.S. Patent 6,452,650) in view of Sugino et al. (U.S. Patent 5,087,664).

In re claims 4 and 32, Nakao does not explicitly disclose wherein the material comprises one or more of: diisocyanate monomers, a diisocyanate end-capped compliant oligomer, and p-toluesulfonyl semicabazide.

Sugino discloses providing a first layer of material comprises diisocyanate monomer and a second layer of material wherein the second material causes a



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reaction in at least a portion of the first layer of material wherein the reaction comprises polymerization (col. 4, line 58 to col. 5, line 4). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Nakao and Sugino to enable the polymerization reaction of Nakao be performed and furthermore to provide an undercoating material composed essentially of such a plastisol composition containing an adhesion-imparting agent having good storage stability and being capable of firmly bonding to a electro-deposited metal in a short period of time within a wide temperature range from a relatively low temperature to a high temperature (col. 2, lines 53-51).

***Allowable Subject Matter***

Claims 10-14, and 16 are allowed.

***Response to Applicants' Amendment and Argument***

Applicants contend that the reference Nakao et al., U.S. Patent 6,452,650 herein known as Nakao does not teach a second material causing a reaction in a portion of the first material.

In response to Applicants contention that Nakao does not teach a second material causing a reaction in a portion of the first material, Examiner respectfully disagree. Applicants are directed to (col. 16, line 65 to col. 17, line 13) where Nakao discloses a second material (oligomers or liquid crystals) causes a reaction in a portion of the first material (polymerizable monomers) (col. 16, lines 65-66) to produce polymer network type liquid crystal element (col. 17, lines 6-10). Thus, Nakao teaches the Applicants' claimed invention.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.N.  
January 27<sup>th</sup>, 2005

  
W. DAVID COLEMAN  
PRIMARY EXAMINER